

SB 438 Testimony
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This text with clickable links can be found at <http://joshuabarclay.fatcow.com/SB438Testimony.pdf>

My name is Joshua Barclay, I am a physics teacher at West Bloomfield High School, and a customer-generator of renewable energy at my family's home in Whitmore Lake. Our 3.2 kilowatt solar array was installed in 2006 at a cost of approximately \$40,000. It has generated approximately 5500 kWh each year since then. I last testified about net metering in front of a state Senate Committee here in 2008. That year I estimated that once net metering was instituted, I would have a return on my investment in between 70 and 80 years. If SB 438 is instituted, my family will never earn a return on our investment. The system would not last until the projected year of return on investment, which would be in the 23rd century.

With the current law, which is true net metering, the calculation of return on investment (ROI) is easy- I did it on the back of an envelope-here it is: 5500 kWh/yr times \$0.11 cents/kWh = \$605 cost savings per year. \$40,000 divided by \$605/yr equals 66 years. Because of a gradual degradation of panel performance, I rounded this up to 70 or 80 years. With the system proposed in SB 438, the calculation required a complicated algorithm on a spreadsheet which is almost assuredly incorrect because the price is set by the utility company and could change, and no one can predict how much of their energy will be sent to the grid on any given day. I had to make several assumptions that are likely wrong, but I am very confident that even with the most generous assumptions my array will not pay off this century. I challenge anyone here to predict how much my array will take to pay off given my data. It is for all effective purposes impossible. True net metering makes power costs predictable. Predictability of costs is of the utmost importance to individuals and businesses both large and small, and is a great advantage of net metered solar over the volatile price of fossil fuels. SB 438 does not give businesses confidence of any sort.

Net metering has been described as "providing the most significant boost of any policy tool at any level of government...to decentralize and 'green' American energy sources."¹ It is one of the prime motivators for individuals and businesses to invest in renewable energy, for the very reason that it makes energy costs predictable. In 2007, there were fewer than a dozen customers in Michigan net metering. By 2009, once true net metering was established here in Michigan, there were 254 customers, by 2011, there were over a thousand, and in 2014, within only 6 years of the implementation of PA 295, there were 1,840 customer-generators, generating 14.2 MW of power, a geometric rate of growth.

You can bet that as a teacher, I was proud when Michigan's grade in the state by state rating of net metering policies by the Interstate Renewable Energy Council went from an F in 2008 to a B in 2009. A grade of B is where we stand today², which places us above only 13 other states. Do we really want Michigan to lead a race to the bottom, by being the first state in the union to eliminate its net metering program? Make no mistake, the proposed program is not net metering.

According to the Solar Energy Industries Association, "The U.S. installed 1,306 megawatts (MW) of solar photovoltaics (PV) in the first quarter of 2015 to reach 21.3 gigawatts (GW) of total installed capacity, enough to power 4.3 million American homes. 51 percent of new electric generating capacity came from solar in Q1 2015, and the residential and utility-scale segments each added more capacity than the natural gas industry."³ Does Michigan want to be on the forefront of this technology, or with SB 438, pulling up the rear as other states jump on future bandwagon while we cling to outmoded technologies of the past.

"We buy more than 60 percent of the materials used to produce energy from outside Michigan," To quote Keith den Hollander, chairman of the Christian Coalition of Michigan, and a member of the Michigan Conservative Energy Forum⁴

All that money for those materials is being sent out of state, and not to Michiganders. Michigan used coal for 50% of its net electricity generation in 2014. Much of Michigan's coal is brought by rail from Wyoming and Montana according to the US energy information administration.⁵ All that money could instead go to Michigan businesses and ratepayers if we grow net metering instead of shrinking it. We won't have to truck in all that coal, saving delivery costs as well! Solar energy has the extra benefit of free delivery to wherever you need it. You can't get better fuel source security than free fuel that delivers itself right to your front door.

President Ronald Reagan said, "What is a conservative after all but one who conserves..."⁶ Net metering has an effect equivalent to that of efficiency, in that less energy is drawn from distant, mass energy generation sites such as coal plants, but even better, for solar net metering this reduction happens during peak demand hours when energy is most expensive to generate.

Study after study has found that Net Metering creates a net benefit to all ratepayers. Vermont Public Service Department research found that net metering results in a 4.3 cents/kWh generated societal benefit.⁷ A study out of the State University of New York at Albany and George Washington University states that societal benefit ranges between 15 and 40 cents per kWh generated by customers. To quote the study, “Benefits that are relevant to utilities and their rate payers include traditional, measures of energy and capacity. Benefits that are tangible to taxpayers include environmental, fuel price mitigation, outage risk protection, and long-term economic growth components.”⁸ Study done for Nevada PUC finds, quote, “The macroeconomic impacts of NEM installed through 2016 in Nevada are likely positive...”⁹ A study from the Missouri Energy Initiative, a non-profit whose board includes reps from utility companies as well as academics, researchers and policymakers found that even accounting for increased utility administrative costs and the shifting fixed expenses, electric ratepayers overall came out ahead with net metering, to quote the study, “The net effect of net metering in Missouri is positive....benefits in every year (2008-2012) are greater than the costs.”¹⁰

The Federal Clean Power Plan will require a reduction of carbon emissions in Michigan by 32%. At this critical juncture, why would we want to disincentivize renewable energy? With Net Metering-the customer does all the work, pays for all the generation capacity, does all of the construction and takes all the risk, yet provides Michigan with more renewable energy, more jobs, and less pollution.

Lets use this opportunity to reverse this job-killing, economy killing and clean air killing legislation, and instead strengthen net metering in Michigan. Lets get that grade of A for Michiganders by doing the following: Not only keep our current net metering policy in place, but increase the size of allowable systems for true net metering to 150 kW so farmers and businesses can benefit in the new energy economy. Also add “virtual net metering” to allow non-utility owned community solar projects, increasing customer choice.

Net metered solar systems stabilizes the power grid and reduce electrical flow bottlenecks. Net metered systems reduce line loss, which can be up to 10% of energy generated, down to nearly zero. Renewable energy systems emit no pollution. Solar installations provide electric energy during peak demand times. These projects inject money into the local economy instead of sending it out of state where the vast majority of our energy dollars currently go. They promote business and manufacturing growth in Michigan. They install quickly: it takes 5 years to build a coal plant, but the citizens of Germany installed 1.8 gigawatts of solar in only one year last year.

In closing I would like to remind this committee that Michigan still lags behind most of the Midwest in renewable energy deployment. Michigan’s total installed solar capacity at the end of 2011 was 8.8 MW. In comparison, Ohio had installed a total of 31.6 MW, Illinois had 16.2 MW and Wisconsin had 12.9 MW. Other leading states include New Jersey (566 MW), Arizona (398 MW), Colorado (197 MW), New Mexico (165 MW) and Pennsylvania (133 MW). Nationally, California leads all states with 1563.6 MW of installed capacity – 177 times the capacity of Michigan!¹¹ This is no time to put Michigan further behind in the race for our energy future, rather lets use this opportunity to pull Michigan farther ahead by broadening, not eliminating our true net metering program.

¹ Steven Ferry, Duke Environmental Law and Policy Forum 2003 (14:1-120)

² <http://freeingthegrid.org/#state-grades/michigan>

³ <http://www.seia.org/research-resources/us-solar-market-insight>

⁴ <http://www.detroitnews.com/story/opinion/columnists/nolan-finley/2015/03/11/finley-right-wingers-go-green/70166832/>

⁵ <http://www.eia.gov/state/?sid=MI>

⁶ <http://conservamerica.org/conservativequotes/>

⁷ http://publicservice.vermont.gov/sites/psd/files/Topics/Renewable_Energy/Net_Metering/Act%20125%20Study%2020130115%20Final.pdf

⁸ <http://www.asrc.cestm.albany.edu/perez/2011/solval.pdf>

⁹ <http://goo.gl/Z5wFIB>

¹⁰ <http://www.moenergy.org/publications/whitepapers/net-metering-in-missouri>

¹¹ https://www.michigan.gov/documents/energy/MPSC_Chairman_Slides_update_414198_7.pdf

Solar Energy For Michigan

Midland Solar Applications

Steve Ellebracht – President

Mike Langenburg – Vice President - Operations

Solar Electric Production Advantages

- Solar will be the lowest cost energy source – Achieved by continued technology advances coupled with streamlined installation processes.
- Solar is the most abundant source of energy – the sun puts more energy on the earth in one hour than mankind uses in one year.
- Compliments Peak Load demand
- Solar energy is renewable
- Solar energy is emission free and not polluting
- Solar is distributive. Available anywhere on earth with little distribution costs and energy losses .
- Solar power generation requires very little maintenance.
- Solar power requires no fuel costs and fuel transportation.
- **Michigan needs a sustainable distributed customer owned solar strategy to take advantage of this important source of electrical energy**



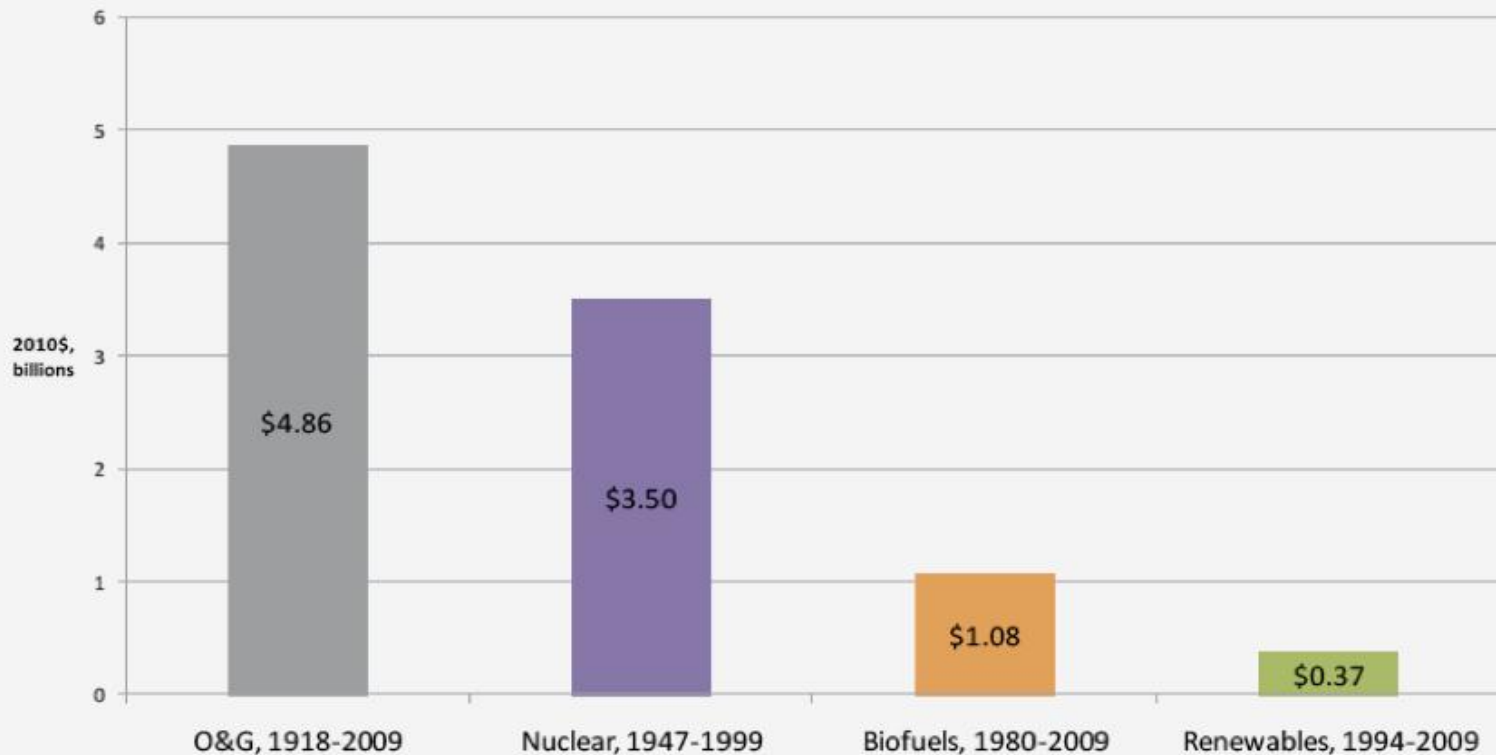
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B U S I N E S S C O U N C I L

• **Facts about Solar Power in Michigan**

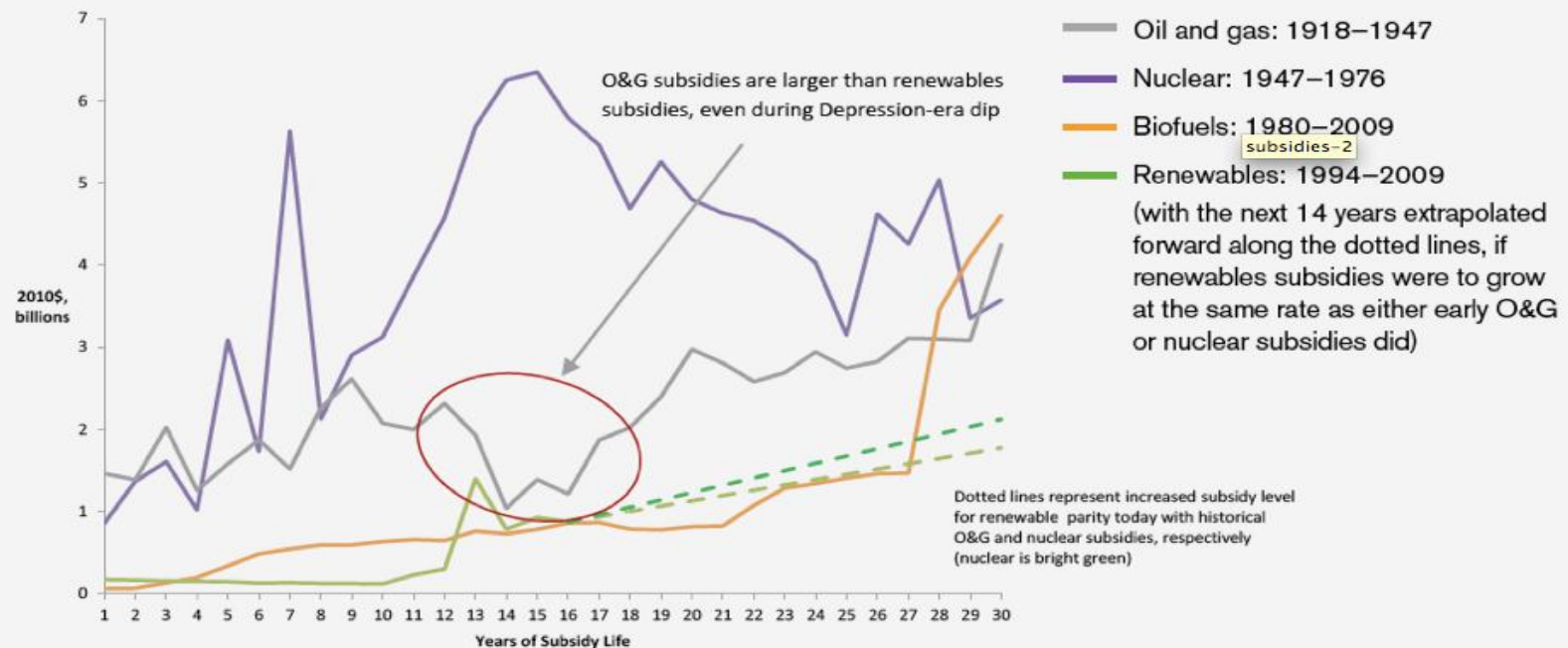
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- Solar manufacturing in Michigan generates \$1.6 billion in annual economic activity in the state
 - This is manufacturing only, and does not include the economic impact of solar deployment or research and development
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- Michigan is home to 121 identified solar power supply chain businesses
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- Michigan gets significantly more sunlight than Germany, the world leader in solar deployment
 - Germany gets on average approximately 1200 kWh/ m²/ year, while Michigan gets on average approximately 1600 kWh/ m²/ year.
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- Hemlock Semiconductor is the world's largest manufacturer of polycrystalline silicon
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- Installed solar in Michigan increased six-fold between 2009 and July 2012
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- Despite Michigan's growth in installed solar capacity, it continues to lag well behind leading states, as well as other Midwestern states
 - Michigan's total installed solar capacity at the end of 2011 was 8.8 MW
 - In comparison, Ohio had installed a total of 31.6 MW, Illinois had 16.2 MW and Wisconsin had 12.9 MW
 - Nationally, California leads all states with 1563.6 MW of installed capacity – 177 times the capacity of Michigan!
 - Other leading states include New Jersey (566 MW), Arizona (398 MW), Colorado (197 MW), New Mexico (165 MW) and Pennsylvania (133 MW)
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- Installed photovoltaic capacity nationwide doubled between 2010 and 2011
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- Costs for installed solar have been rapidly declining, falling from \$11/ W installed in 1998 to less than \$4/ W installed in the first six months of 2012
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- We will soon reach the point at which it is cheaper for homeowners and businesses to generate their own electricity from solar panels than it is to get it from their utility (known as socket parity)
 - While a number of factors affect when socket parity will be achieved, it will happen within the timeframe covered by the decisions stemming from the current data gathering exercise

Subsidies for Renewables Lags Those Given to Other Energy Sources

subsidies
**Historical Average of Annual Energy Subsidies:
A Century of Federal Support**



Comparison of Early Federal Subsidies to Energy Sectors



The analysis was conducted by Nancy Pfund, a managing partner at DBL Investors of San Francisco, and Ben Healy, a Yale graduate student and former staff director for the Massachusetts legislature's environment and natural resource committee. Pfund and Healy say — as far as they know — they're the first to quantify exactly how the current federal commitment to renewables compares to support for earlier energy transitions.






Current Michigan Program Lack of Transparency

- **What did Utility Customers get for the Renewable Energy Surcharge??**
- Utilities collected a total of \$480,000,000 dollars in renewable energy fees from customers
- At the end of 2011 Michigan had 8.8MW of Solar Energy – This is little return for Investment!
 - Example: Utility Owned: Mercy High School Bid \$6.25/W
- Current program of lottery is not a sustainable program.

Suggested More Efficient Use of Money

- If we had spent the \$480,000,000 on Solar
- And if we have a \$2/W Incentive, that would result in installation of 240MW fully paid for.
- Would Employ 2,380 FTE, just in the design and install portion of the supply chain. Does not include materials. (Real companies used to determine the number of employees per revenue generated)

EXAMPLES OF DTE OWNED COSTS

Partner	Location	Generation Capacity	More Information
	Detroit Hamtramck Assembly Plant, Wayne County	516 kW	Press release See Output
	Orion Plant, Oakland County	345 kW	See Output
	Michigan Assembly Plant on Michigan Avenue, Wayne County	502 kW 6.00/watt	Press release See Output
	BCBS parking garage roof, downtown Detroit, Wayne County	220 kW 5.00/watt	Press release See Output
	Monroe County Community College campus in Monroe, Monroe County	513 kW 6.00/watt	Press release See Output
	Mercy High School roof, Farmington Hills, Oakland County	394 kW 6.29/watt	Press release See Output

The State of Michigan Is Not Competitive With Other States

- 19 States have a solar carve-out (2% or more of the renewable energy portfolio has to be Solar) as a part of their renewable energy portfolio. (Examples include Missouri, Pennsylvania, New Jersey, Arizona, Colorado, etc) – Michigan does not
- 28 States have sales tax incentives – Michigan does not
- 18 States have rebate programs for renewables – Michigan does not
- 37 States have property tax incentives (Michigan ended year-end 2012)

Our Company Performance

Michigan VS Missouri

Year	2010 (FTE/Rev)	2011 (FTE/REV)	2012 (FTE/REV)	2013 Est. (FTE/REV)
Midland Solar	1/\$61,000	4 / \$440,000	3 /\$300,000	1/\$100,000
Missouri Solar	2/50,000	8/\$1,800,000	22/\$4,200,000	35/\$7,000,000

Reasonable Energy Strategy

- Focus on Natural Gas Development (However, there much greater value in using Natural Gas for down stream products)
- Continue: Coal, Hydro, Wind ETC.
- Establish Sustainable Presence in Solar Energy to take advantage of the energy source when it becomes the lowest cost option

How to Enhance the Role of Solar to Accomplish Renewable Mandates

- **Consistent** and Sustainable Solar Program
 - A **consistent** solar program provides a demand base leading to continued employment while giving utilities a better planning basis for meeting Michigan energy needs
 - **Consistent** demand leads to greater cost reductions through learning curve and economy of scale improvements
 - **Consistent** demand would support Michigan Solar Industry Capital Investments